DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL CENTER FOR RESEARCH RESOURCES

NATIONAL ADVISORY RESEARCH RESOURCES COUNCIL
MINUTES OF MEETING
MAY 19, 2005

The National Advisory Research Resources Council convened for its 130th session at 8:30 a.m. on Thursday, May 19, 2005, in Conference Room 10, Building 31. Dr. Barbara M. Alving, Acting Director, National Center for Research Resources (NCRR), National Institutes of Health (NIH), presided as Chair. The meeting was open to the public until 2:00 p.m., at which time it was closed to the public for the review, discussion, and evaluation of grant applications as provided in Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code, and Section 10(d) of Public Law 92-463.

COUNCIL MEMBERS PRESENT

Dr. Robert J. Beall
Dr. Wah Chiu
Dr. Kenneth G. Cornetta
Dr. Randall E. Dalton
Col. (Dr.) Peter Demitry
Dr. Machi F. Dilworth
Liaison Member, NSF
Dr. Mark H. Ellisman
Dr. Catherine C. Fenselau
Dr. James G. Fox
Dr. Kelly D. Garcia
Dr. Roland F. Hirsch
Liaison Member, DOE
Dr. Joan S. Hunt
Dr. Cynthia E. Keppel
Dr. Barbara B. Knowles
Dr. Bettie Sue Masters
Dr. Thomas G. McGuire
Dr. Arthur W. Toga
Ms. Sheila C. Zimmet
Dr. Stuart M. Zola

COUNCIL MEMBERS ABSENT

Dr. John E. Maupin, Jr.
Dr. Paul G. Ramsey

SPECIAL INVITED GUESTS FOR OPEN SESSION

Dr. Carl A. Pinkert, Professor, Department of Pathology and Laboratory Medicine Center of Aging and Developmental Biology, University of Rochester School of Medicine and Dentistry
Dr. Leonard L. Howell, Associate Research Professor, Yerkes National Primate Research Center, Department of Psychiatry and Behavioral Sciences at Emory University
Dr. Jeffrey A. Rogers, Scientist, Southwest National Primate Research Center, Southwest Foundation for Biomedical Research
Dr. David I. Watkins, Professor of Pathology, Wisconsin National Primate Research Center, University of Wisconsin Medical School
Dr. Gwen A. Jacobs, Department Head, Department of Cell Biology & Neuroscience, Montana State University
Dr. Jason Leigh, Associate Professor of Computer Science, University of Illinois at Chicago

STAFF OF OTHER NIH COMPONENTS
Dr. Judith L. Vaitukaitis, OD/NIH
Dr. Margaret D. Snyder, OSA/OD/NIH

OPEN SESSION

I. Call to Order: Dr. Barbara M. Alving, Acting Director, NCRR

Dr. Alving welcomed Council members and guests to the 130th meeting of the National Advisory Research Resources Council. She announced that the following Council members would not be present: Dr. John E. Maupin, Jr. and Dr. Paul G. Ramsey. Dr. Alving introduced three new members of the Council. They are: Dr. Barbara B. Knowles, Senior Staff Scientist, The Jackson Laboratory, Bar Harbor, Maine; Dr. Bettie Sue Masters, Professor, Department of Biochemistry, University of Texas Health Science Center at San Antonio; and Dr. Arthur W. Toga, Director, Laboratory of Neuro Imaging, Department of Neurology, University of California, Los Angeles.

II. Consideration of Minutes: Dr. Barbara M. Alving, Acting Director, NCRR

The minutes of the Council meeting held on January 19, 2005, were approved as written.

III. Future Meeting Dates: Dr. Barbara M. Alving, Acting Director, NCRR

The next Council meeting will be held on Thursday, September 15, 2005.

IV. Personnel Update: Dr. Barbara M. Alving, Acting Director, NCRR

NIH Personnel

Dr. Antonio Scarpa was appointed as the new Director for the NIH Center for Scientific Review by NIH Director Dr. Elias A. Zerhouni in March 2005. Prior to his appointment, Dr. Scarpa was the David and Inez Myers Professor and Chair of the Department of Physiology and Biophysics at Case Western Reserve University.

Dr. Sally J. Rockey was appointed as the new Deputy Director of the Office of Extramural Research by Dr. Zerhouni in January 2005. Prior to her appointment, Dr. Rockey was the Deputy Administrator of the Information Systems and Technology Management Unit, at the U.S. Department of Agriculture.

Dr. Elizabeth G. Nabel was appointed as Director of the National Heart, Lung, and Blood Institute (NHLBI) by Dr. Zerhouni in February 2005. Prior to her appointment, Dr. Nabel had been the Scientific Director of Clinical Research in the NHLBI Intramural Research Program since 1999. Before coming to NIH, she was Chief of the Division of Cardiology and Director of the Cardiovascular Research Center at the University of Michigan.

NCRR Personnel

New Acting Director

Dr. Barbara M. Alving was appointed as Acting Director of NCRR by Dr. Zerhouni in March 2005. Prior to her NCRR appointment, Dr. Alving was the Acting Director of the National Heart, Lung, and Blood Institute (NHLBI) from September 2003 until February 1, 2005. Dr. Alving earned her medical degree—cum laude—from Georgetown University School of Medicine, where she also completed an internship in internal medicine. She received her residency training in internal medicine at the Johns Hopkins University Hospital, followed by a fellowship in hematology. Dr. Alving then became a research investigator in the Division of Blood and Blood Products at the Food and Drug Administration. In 1980, she joined the Department of Hematology at the Walter Reed Army Institute of Research and became Chief of the Department in 1992. She left the Army at the rank of Colonel in 1996 to become the Director of the Medical Oncology/Hematology section at Washington Hospital Center in Washington, D.C. In 1999, she joined NHLBI, serving as the Director of the extramural Division of Blood Diseases and Resources until becoming the Deputy Director of the Institute in September 2001. In October 2002, she assumed directorship of the Women's Health Initiative, and continues to serve in this position.

New Senior Advisor

Dr. Robert A. Star was appointed as Senior Advisor on Clinical and Translational Sciences to NCRR Acting Director Dr. Barbara M. Alving in April 2005. Dr. Star's major focus will be to integrate initiatives from one theme of the NIH Roadmap—Re-engineering the Clinical Research Enterprise—into NCRR programs. Since 2002, Dr. Star has served as a Senior Advisor for Clinical Research in the Office for Science Policy and Planning, Office of Science Policy, Office of the Director, NIH. He worked on clinical research issues for the Re-engineering the Clinical Research Enterprise portion of the NIH Roadmap and co-chairs the Roadmap Trans-NIH Clinical Research Workforce Committee. Dr. Star joined NIH in 1999 as a Senior Scientific Advisor in the Division of Kidney, Hematologic and Urologic Diseases in the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). He also is a senior investigator at NIDDK and Chief of the Renal Diagnostics and Therapeutics Unit. Dr. Star's laboratory studies new methods to diagnose and treat acute renal failure, and has developed a clinically relevant model of sepsis-induced acute renal failure and several MRI imaging methods. Dr. Star received his medical degree—cum laude—from Harvard Medical School and the Massachusetts Institute of Technology Joint Program in Health Sciences and Technology.

Tribute to Dr. Judith L. Vaitukaitis

Former NCRR Director Dr. Judith L. Vaitukaitis was appointed as the Senior Advisor on Scientific Infrastructure and Resources to Dr. Zerhouni in March 2005. In this capacity,

she will advise Dr. Zerhouni on the critical choices that will contribute to solving future research challenges. At the Council meeting, Dr. Louise E. Ramm, NCRR Deputy Director, delivered a tribute honoring Dr. Vaitukaitis and her many contributions to biomedical research throughout her career. Under Dr. Vaitukaitis' leadership from 1993 to 2005, NCRR's budget almost quadrupled, and program areas expanded to include a broad range of cutting-edge research resources, state-of-the art technologies, and critical biological models of human disease. To address new and evolving research needs, Dr. Vaitukaitis was at the forefront in encouraging resource sharing and interdisciplinary collaborations. She also was devoted to providing support to mentoring promising investigators to develop their research skills so that they could become the next generation of independent researchers. Through strategic planning, Dr. Vaitukaitis found ways to ensure that a lack of resources did not impede research progress. Under her direction, NCRR was able to track cutting-edge advances and identify emerging trends across biomedical research.

Under Dr. Vaitukaitis' leadership, NCRR established five national gene vector laboratories, ten islet cell research resource centers, five mutant mouse regional resource centers, and expanded the National Primate Research Centers (NPRCs) network. Additionally, NCRR established the Institutional Development Award (IDeA) Program, expanded the Research Centers in Minority Institutions (RCMI) Program, and established the RCMI Clinical Research Infrastructure Initiative. Dr. Vaitukaitis was instrumental in expanding the Science Education Partnership Award Program to include science centers and museums. She also initiated the High-End Instrumentation Grant Program for equipment costing over $750,000 dollars. During her tenure, NCRR launched the Biomedical Informatics Research Network (BIRN) and initiated new career development awards.

On behalf of the Council and the entire NCRR staff, Dr. Ramm thanked Dr. Vaitukaitis for her many years of service and dedication to biomedical research. Dr. Ramm then invited several Council members to share their thoughts and memories of working with Dr. Vaitukaitis and to pay tribute to her. Presentations were made by Dr. Robert Beall, Dr. Kenneth Cornetta, and Dr. Joan Hunt—all long-time colleagues of Dr. Vaitukaitis.

Other NCRR Personnel Changes

Dr. John (Jack) D. Harding was appointed as the Director of the Primate Resource Program in the Division of Comparative Medicine (DCM) in May 2005. His primary responsibility will include program oversight for the National Primate Research Centers, other primate resource and research programs, the specific-pathogen free primate breeding colonies, and primate information. Dr. Harding joined NCRR in 1998 and has served as a Health Scientist Administrator in the DCM since 2000.

Dr. William F. Rall joined the NCRR staff as a Health Scientist Administrator in the DCM in May 2005. Prior to his appointment, Dr. Rall managed a central core facility in the Veterinary Resources Division of the Office of Research Services at the NIH. Before

joining NIH, he served as a Staff Scientist at both the Smithsonian Institution's National Zoological Park and the American Type Culture Collection.

Mr. William (Bill) K. Russ, will retire from his position as NCRR Executive Officer in June 2005. Mr. Russ began his NIH career at NHLBI and then went on to work as a Budget Analyst at both the National Institute of Allergy and Infectious Diseases and for the NIH Office of the Director. Bill also served as Executive Officer at the National Center for Nursing Research (now the National Institute of Nursing Research). He has worked for NCRR twice: first in 1980, when it was known as the Division of Research Resources, and then again from 1995 to 2005.

Dr. Geoffrey P. Cheung retired from his position as Health Scientist Administrator in the Division for Clinical Research Resources in March 2005. He was primarily responsible for monitoring and promoting NCRR's clinical research programs. Dr. Cheung's career included over 30 years of Federal service at NIH.

V. Legislative and Budget Updates: Barbara M. Alving, Acting Director, NCRR

Dr. Alving reported on the FY 2006 NCRR Appropriation:

The President's Budget request for FY 2006 was released on February 7, 2005. The FY 2006 program level for the NIH is $28.8 billion, an increase of $196 million or 0.7 percent over the FY 2005 Appropriation. For NCRR, the President's Budget request is $1.1 billion, a decrease of $14.8 million or 1.35 percent below the FY 2005 Appropriation. Consistent with the FY 2005 President's Budget Request, no funds for extramural construction are included in the FY 2006 request. Included in the FY 2006 request is NCRR's support for the trans-NIH Roadmap initiatives, estimated at $9.8 million or 0.89 percent of the FY 2006 budget request. The FY 2006 request for NCRR also includes funds for support of the NIH Neuroscience Blueprint and support of the national repository and characterization center for human embryonic stem cell lines currently eligible for Federal funding.

The following information on the NIH Reauthorization was also provided:

Congressional reauthorization of NIH is being considered by the House Energy and Commerce Committee, which is chaired by Representative Joe Barton (R-TX). At the March 17 hearing of the Health Subcommittee, Representative Barton mentioned three areas of NIH management that he would like the reauthorization to address. These management areas include expanding the authority of the NIH Director to transfer funds among Institutes and Centers (ICs), better coordination of budgeting among the ICs, and a more transparent system for reporting research progress.

VI. Neuropharmacology of Cocaine in Nonhuman Primates - Implications for Medications Development: Dr. Leonard L. Howell, Associate Research Professor,

Yerkes National Primate Research Center, Department of Psychiatry and Behavioral Sciences at Emory University

Dr. Howell discussed developing medications to treat cocaine addiction. The theory behind his research is that a substance that shares some pharmacological properties of the abused drug will be a useful pharmacotherapy. The benefits of this approach are increased patient compliance, reduced withdrawal (if present), reduced drug craving, and stabilization of dysregulated systems.

Cocaine blocks the following monoamine transporters: dopamine transporter (DAT), serotonin transporter (SERT), and norepinephrine transporter (NET). The majority of research is focused on the dopamine transporter, because it's been most closely linked to the addictive properties of cocaine. Dr. Howell and his colleagues are researching monoamine transporter inhibitors and their ability to alter cocaine self-administration in nonhuman primates.

By using PET neuroimaging, they can determine dopamine transporter occupancy. Their studies have shown that to decrease cocaine use by 50 percent, each DAT inhibitor requires 70 percent occupancy of the dopamine transporters. All of the selective DAT inhibitors reliably maintained drug self-administration but were less effective than cocaine even at high levels of DAT occupancy. Their pharmacokinetic profile of slow uptake and clearance from the brain may have limited their reinforcing effects and abuse liability.

In contrast, mixed-action DAT/SERT inhibitors did not require high levels of occupancy of the dopamine transporters to produce decreased cocaine use. The co-administration of SERT inhibitors enhanced the effectiveness of a DAT inhibitor to suppress cocaine self-administration. Overall, the results support the view that monoamine transporter inhibitors warrant consideration as potential cocaine medications with limited abuse liability.

VII. Genomic Analysis of Complex Phenotypes in Nonhuman Primates: Dr. Jeffrey A. Rogers, Scientist, Southwest National Primate Research Center, Southwest Foundation for Biomedical Research

Dr. Rogers reported on his research into the genetics of behavior in baboons. The physiologic basis of behavior is a complex genetic process that is influenced by multiple genes and is affected by environmental factors, similar to complex genetic diseases such as heart disease, depression, hypertension, and osteoporosis. Because complex genetic diseases are due to the interplay of multiple genes and the environment, the best way to express the chances of any one individual developing a specific trait is in terms of a probability, rather than a simple yes or no. One approach to finding genes that are associated with a high probability of developing a complex genetic trait is by using whole genome linkage analysis to find quantitative trait loci. In whole genome linkage analysis, genetic data are collected from many individuals who can be grouped into

families. When the individuals have been tested for the traits of interest, statistical tests are run to find correlations between the presence of genetic markers and the expression of phenotypic traits. These statistical tests allow the researchers to make quantitative statistical predictions of the likelihood that various regions of chromosomes contain genes that influence a given trait. The use of nonhuman primates for these tests is particularly informative because their genomes have been mapped for comparison to the human genome; the genes of nonhuman primates—such as baboons—are very similar to the genes of humans; and because experimental procedures that would be difficult or inappropriate for human subjects can be used with nonhuman primates.

Dr. Rogers spoke specifically about one set of experiments that is aimed at understanding the risk factors for psychiatric illness by investigating the relationship between temperament and monoamine neurotransmitters. Since human temperament is a complex trait that is known to have some inherited basis and also to be associated with risk for psychiatric diseases, and because monoamine neurotransmitters are known to influence temperament, the researchers used whole genome linkage analysis to explore how strongly genetic inheritance affects these two traits. These studies were conducted on a group of baboons with a well-verified pedigree and a full genetic linkage map. The scientists rated the behavior of the baboons in situations where they were exposed to novel stimuli, then drew cerebrospinal fluid to assay neurotransmitter levels. Then, they used a statistical analysis to correlate the animal behavior and neurotransmitter levels with regions of the chromosomes. The researchers found evidence for heritability of baboon behavior; they also found several regions of the chromosomes that are linked to specific behavioral responses to novel stimuli. They also found evidence for heritability of neurotransmitter levels and candidate regions of the baboon genome that may affect these levels.

Dr. Rogers also discussed a collaboration with Dr. Judy Cameron of the Oregon NPRC and other groups, in which they are extending their research to explore the genetic basis of anxiety in rhesus monkeys. This work involves genotyping 1,200 rhesus monkeys and assessing their behavior when confronted by novel stimuli. The project has already found several behaviors that are heritable in the rhesus monkeys, and Dr. Rogers is now working to conduct whole genome linkage analyses.

VIII. Facilitating a Vaccine for HIV: Dr. David I. Watkins, Professor of Pathology, Wisconsin National Primate Research Center, University of Wisconsin Medical School

Dr. David Watkins discussed the ever-increasing urgency to develop a vaccine for the human immunodeficiency virus (HIV). Approximately 43 million individuals—over 30 percent in Sub-Saharan Africa and in regions of southern and southeastern Asia—were living with HIV, according to a 2004 World Health Organization estimate. Furthermore, approximately one quarter of all deaths in Africa are attributable to the acquired immunodeficiency syndrome (AIDS), the disease caused by HIV. The ultimate goal is to develop an HIV vaccine that would prevent infection, and scientists are using nonhuman

primates for such research. To that end, researchers are studying Indian rhesus macaques, because their immune systems are markedly similar to humans. These macaques can be infected with simian immunodeficiency virus (SIV), which is closely related to HIV and causes an AIDS-like disease in monkeys.

Dr. Watkins' laboratory at the Wisconsin NPRC developed resources including tetramers, Major Histocompatibility Complex (MHC) typing, and low-dose SIV challenge for HIV vaccine experiments. Tetramers are reagents that measure the number of activated lymphocytes that are produced by vaccination. They are important for enumerating SIV-specific and vaccine-induced T cell responses. The interaction of the T cell receptor with MHC class I or class II molecules presenting antigenic peptides is critical for cellular immune response. Antigenic peptides are bound to the MHC class I molecules, utilizing anchor pockets that are unique to each allele. For this reason, the MHC genotype of each individual must be defined. Knowledge of an animal's (or person's) MHC genotype allows researchers to predict immune responses. Dr. Watkins' laboratory sought to mimic HIV transmission by developing a repeated low-dose SIVmac239 challenge and conducting a dose-range pilot study, monitoring plasma for infection.

In attempting to develop a vaccine for HIV, they use Merck's experimental DNA/Ad5 vaccine with viral genes encoding Gag, Tat, Rev, and Nef as immunogens. After vaccination, the animals' immune systems responded measurably. Animals given this vaccine controlled a challenge with virulent SIV significantly better than animals that had not been vaccinated. Although the vaccination seemed to help animals keep SIV infection under control, it did not affect the number of challenges required for infection to occur. Immune responses against the proteins Tat, Rev, and Nef, which are expressed early in the viral life cycle, have been implicated in control of SIV replication. Together, Dr. Watkins' studies suggest that vaccine-induced cellular immune responses can control replication of highly pathogenic SIVmac239.

The role of the NPRCs in HIV vaccine development is paramount. The National Institute of Allergy and Infectious Diseases is currently reviewing applications from institutions seeking to serve as the Center for HIV/AIDS Vaccine Immunology (CHAVI). CHAVI will support intensive and highly collaborative projects addressing key immunological roadblocks to the discovery and development of a safe and effective HIV vaccine as defined by NIAID and identified by the Global HIV Vaccine Enterprise. Project grant applications received by this Center will require potential grantees to have access to NCRR-supported nonhuman primate models. Furthermore, numerous research proposals submitted to the Gates Foundation also will employ NPRC resources. Finally, many investigator-initiated research projects (R01) involving nonhuman primate vaccine testing will primarily be conducted at the NPRCs. SIV- infected rhesus macaques are the only animal model available for testing AIDS vaccine concepts.

IX. Update on Clinical Research Activities: Dr. Robert Star, Senior Advisor on Clinical and Translational Sciences, NCRR; Dr. Anthony Hayward, Director, Division for Clinical Research Resources, NCRR

Dr. Zerhouni has made great strides toward re-engineering the clinical research enterprise through the NIH Roadmap. The Roadmap identifies major opportunities and gaps in biomedical research that no single NIH IC can address alone and encourages cross-Institute activities to make the biggest impact on the progress of biomedical research. To that end, Dr. Star updated Council members on Dr. Zerhouni's vision to transform clinical and translational sciences into an academic discipline. He explained some of the current challenges that are impeding progress in clinical research, such as fragmented healthcare, difficulty recruiting and retaining clinical researchers, and inadequate support for clinical research infrastructure. Dr. Star suggested that many of the current problems basically result from the absence of a true intellectual home for the emerging discipline of clinical and translational sciences.

The goal of this new initiative is to create an integrated program that will serve as the focus for clinical and translational sciences at Academic Health Centers. This program would likely fund awards that would encompass the following core components: 1.) research design development and related services, including regulatory support; 2.) education, training, and career development, with an option of a clinical and translational sciences degree-granting program; 3.) clinical research informatics and data management support; 4.) clinical research resources, including space and personnel for inpatient, outpatient, and community studies and patient recruitment services; and 5.) core technologies and laboratories.

Dr. Hayward informed Council members of an upcoming meeting that would be held in Crystal City, Virginia, entitled, *Enhancing the Discipline of Clinical and Translational Sciences*. The purpose of the meeting is to obtain input from members of the clinical and translational research community as to how NIH can 1.) foster the clinical and translational sciences into a new academic discipline; 2.) promote the training and career pathways of clinical and translational investigators; 3.) allow for the more comprehensive integration and expansion of resources for clinical and translational research; and 4.) improve intra and inter-institutional collaborations. He referred Council members to www.ncrr.nih.gov/clinicaldiscipline.asp for more information.

X. The Lariat Networking Project: Dr. Gwen A. Jacobs, Department Head, Department of Cell Biology & Neuroscience, Montana State University

Dr. Jacobs provided an overview of the Lariat Project, which is the first phase of IDeANet—an Internet-based network providing connectivity for high-bandwidth science applications. The importance of high-speed network infrastructure in supporting a wide range of science and educational objectives has been well identified, and numerous national and international examples stand as exemplars. Within the United States, research and educational communities are well served by Internet2 and its Abilene

high-speed backbone. Today's research and educational communities have come to recognize and embrace the use of high-speed networks as key components in their suite of instruments essential to meeting their objectives. IDeANet will enable collaboration among institutions, ultimately supporting all participants in the IDeA Program, and also participants in the RCMI Program.

Dr. Jacobs noted that by linking the IDeA and RCMI researchers to national high-speed network backbones, IDeANet will also provide new opportunities for greater inclusion of under-represented minority and rural populations in biomedical and behavioral research. IDeANet will also provide connectivity to other NCRR-supported networks, such as the BIRN. IDeANet currently provides support through a cooperative agreement for a testbed consortium (called "Lariat") of six IDeA states in the Northwest (Montana, Idaho, Nevada, Alaska, Hawaii, and Wyoming). Currently, these states are not equipped with state-of-the art network infrastructure, and the establishment of this network will bring the western region on par with its peers.

The Lariat Project supports staff in bioinformatics and data management cores, computer hardware and software, and Internet2 broad-bandwidth access. Lariat will support educational and research needs and will bring this region into the mainstream of American science and healthcare delivery, as enjoyed elsewhere in the United States. Lariat will provide cyber-infrastructure-capable connectivity, eliminate crippling choke points, ensure scalable growth, and allow dedicated bandwidth where needed. Lariat will create two types of networks: 1.) a research network composed of biomedical researchers whose productivity will be increased through collaboration, training, and access to research tools, and 2.) a physical communications network created by upgrading the network connectivity of each site to both the University of Washington's major health sciences research facilities, as well as to regional points of presence: the Pacific Northwest Gigapop in Seattle, the Front Range Gigapop in Denver, and CENIC in Sunnyvale. Two key objectives of this project are to provide access to resources and to build networks in the community.

XI. Cyber-Infrastructure Technology for Advancing BioScience Research and Collaboration: Dr. Jason Leigh, Associate Professor of Computer Science, University of Illinois at Chicago

Dr. Leigh described the dramatic continuing advances in large scale computing, storage, and networking and the work underway in the NSF-funded OptIPuter research project to leverage these advances to enhance research and collaboration. The OptIPuter is named for its use of **Opt**ical networking, **I**nternet **P**rotocol, comp**uter** storage, processing, and visualization technologies.

The OptIPuter will use high speed dedicated networks to create virtual computers by interconnecting instruments, distributed computing, storage, and ultra high resolution display systems. This concept enables the creation of computers that can be scaled to naturally fit the size of the research project. For large, globally distributed research

organizations, this means that computing and other networked resources need not be replicated at all sites. Instead, high speed networks can be used to facilitate more cost effective sharing of the resources, as well as enabling researchers to work with distant collaborators and large scale data. Dr. Leigh described potential uses of this class of infrastructure in the biosciences.

CLOSED SESSION

This portion of the Council meeting was closed to the public in accordance with the determination that it was concerned with matters exempt from mandatory disclosure under Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code and Section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. Appendix 2).

Council members discussed procedures and policies regarding voting and confidentiality of application materials, Committee discussions, and recommendations. Members absented themselves from the meeting during discussion of and voting on applications from their own institutions, or other applications in which there was a potential conflict of interest, real or apparent. Members were asked to sign a statement to that effect.

XII. Application Review

The Council considered 345 applications and recommended 345 for a total first-year amount of $597,056,176 (direct costs).

ADJOURNMENT

The Council adjourned at 3:30 p.m. on May 19, 2005.

CERTIFICATION

We hereby certify that, to the best of our knowledge, the foregoing minutes and supplements are accurate and complete.

_____ _____

Dr. Barbara M. Alving Date
Chair, National Advisory Research Resources Council
and
Acting Director, National Center for Research Resources, NIH

_____ _____

Dr. Louise E. Ramm Date
Executive Secretary, National Advisory Research Resources Council
and
Deputy Director, National Center for Research Resources, NIH

These minutes will be formally considered by the Council at its next meeting; corrections or notations will be incorporated into the minutes of that meeting.

Attachment:
Council Roster

NOTE: Open Session materials are available from the Executive Secretary or the Committee Management Office, NCRR.